

*Attachment E*  
*Draft Long-term Cleanup Plan*



**Chevron Pipe Line Company**

## **Long-Term Cleanup Work Plan**

**Red Butte Creek Crude-oil Spill  
Salt Lake City, Utah**

August 2010

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## TABLE OF CONTENTS

<b>1.0</b>	<b>INTRODUCTION</b>	<b>1</b>
1.1	PURPOSE	1
1.2	OBJECTIVES	1
1.3	BACKGROUND	1
<b>2.0</b>	<b>SUMMARY OF CLEANUP ACTIONS AND PROPOSED LONG-TERM CLEANUP PLAN</b>	<b>3</b>
2.1	SOILS	3
2.1.1	Completed Cleanup	3
2.1.2	Current Cleanup Status	3
2.1.3	Future Cleanup Activities and/or Monitoring	4
2.2	IMPACTED SURFACE WATER	5
2.2.1	Completed Cleanup	5
2.2.2	Current Cleanup Status	6
2.2.3	Future Cleanup Activities and/or Monitoring	6
2.3	IMPACTED SEDIMENT	6
2.3.1	Completed Cleanup	6
2.3.2	Current Cleanup Status	7
2.3.3	Future Cleanup Activities and/or Monitoring	7
2.4	IMPACTED HARD SURFACES	7
2.4.1	Completed Cleanup	7
2.4.2	Current Cleanup Status	7
2.4.3	Future Cleanup Activities and/or Monitoring	7
2.5	IMPACTED GROUNDWATER	8
2.5.1	Completed Cleanup	8
2.5.2	Current Cleanup Status	8
2.5.3	Future Cleanup Activities and/or Monitoring	9
2.6	IMPACTED BIOLOGICAL SPECIES	9
2.6.1	Completed Cleanup	9
2.6.2	Current Cleanup Status	9
2.6.3	Future Cleanup Activities and/or Monitoring	9

***LIST OF APPENDICES***

***Appendix A***      *Removal Action Workplan*  
***Appendix B***      *Site Characterization Summary and Remediation Plan*  
***Appendix C***      *Red Butte Creek Stormwater Culvert Inspection Plan*  
***Appendix D***      *SLC Red butte Creek Incident Water and Sediment Sampling Plan*  
***Appendix E***      *Wildlife Management Plan*

## 1.0 INTRODUCTION

Environmental Resources Management-West, Inc. (ERM) has prepared this Long-Term Cleanup Work Plan (Plan) on behalf of Chevron Pipe Line Company (CPL).

### 1.1 PURPOSE

CPL has received a Notice of Violation and Compliance Order (NOV/CO) issued by the Utah Water Quality Board (Board) for an oil spill originating at a crude oil pipeline operated by CPL that crosses Red Butte Creek near the mouth of Red Butte Canyon in Salt Lake City. The purpose of this Plan is to address Section E (Order), Comment 5 of the NOV. Comment 5 of the NOV states, *"Submit to the EXECUTIVE SECRETARY, within 30 days of receipt of this NOV/CO, a long-term cleanup plan for the impacted area that details Chevron's clean-up and remediation of impacted water bodies, including water column, sediment, and hard surfaces, such as rocks, concrete banks, culverts, ditches and ponds. The plan shall also address spill site soils clean-up, groundwater contamination, and remediation of biological impacts to fish, waterfowl, and aquatic food chain organisms."*

### 1.2 OBJECTIVES

The goal of this Plan is to document the cleanup activities that have been completed, identify the current cleanup status, and detail the long-term cleanup activities that are planned to address any remaining impacted areas. This Plan will outline the areas to be addressed, the cleanup methods and procedures, and the methods to be used to confirm that cleanup has been completed.

### 1.3 BACKGROUND

On June 12, 2010, a crude-oil leak was discovered on the Salt Lake Crude Pipeline at milepost (MP) 174.5, adjacent to the Red Butte Creek in Salt Lake City, Utah. The pipeline, owned and operated by CPL, supplies crude oil to the Chevron Salt Lake Refinery from oil fields east of Salt Lake City.

Cleanup, testing, sampling, inspection, monitoring, and restoration activities that have been conducted to date have been performed under the oversight of a multiple-agency Unified Command structure which includes representatives from the US Environmental Protection Agency (EPA), Utah Department of Environmental Quality (UDEQ), Salt Lake City, Salt Lake Valley Health Department, as well as other local, county,

state, and federal authorities. It is anticipated that Unified Command will eventually stand down and transfer its responsibilities and regulatory oversight authority to the UDEQ, Division of Water Quality (DWQ) which will oversee this long-term cleanup and restoration activities and verify that established cleanup criteria are met.

The response to the spill has focused on the following key tasks: emergency response and creation of the Unified Command, repairing the pipe and stopping the oil leak, containing and removing free oil, responding to impacted parties including wildlife rescue/treatment and providing a temporary clean water supply for irrigation, cordoning off impacted areas from public access, providing information to the public (town hall presentations, a website, and other public information notifications), assessing impacts to natural and manmade structures, and in some cases, cleaning and restoring impacted features or materials. For convenience and ease of communication, the areas of impact have been divided into the following six areas:

1. Spill Site
2. Red Butte Creek
3. Liberty Park Pond
4. Concrete Storm Water Drains
5. Jordan River
6. Mt. Olivet Cemetery Pond

The cleanup approach to date has been to stop the leak and the introduction of new oil to the creek, capture the oil, protect areas from further degradation with containment barriers (e.g., booms, absorbent pads, and sandbags), identify areas that benefit from early remedial work and commence remediation, and sequence work to avoid cleaning the same thing more than once.

## 2.0 SUMMARY OF CLEANUP ACTIONS AND PROPOSED LONG-TERM CLEANUP PLAN

### 2.1 SOIL

#### 2.1.1 *Completed Cleanup*

Soil within the spill site was impacted during the release. The spill site is located on University of Utah property, adjacent and uphill of Red Butte Creek (a distance of approximately 50 ft) and near Red Butte Gardens and an outdoor amphitheater. Activities completed to address impacted soil within the spill site have included the following:

- During initial response operations, removal of free product and excavation and disposal of approximately 500 cubic yards of soil. These activities were completed in June and are described in the daily Incident Action Plans (IAP) approved by Unified Command.
- Exploratory borings were conducted to assess the horizontal and vertical extent of impacted soil within the spill site. These activities were completed during the week of June 21, 2010 and are described in further detail in the *Site Characterization Summary and Remediation Plan* included as Appendix A.
- Removal and relocation of power lines and buried cables by Rocky Mountain Power to facilitate additional excavation of impacted soil from the spill site. These activities were completed during the week of July 12, 2010.
- Preparation of a *Removal Action Workplan* which includes a detailed excavation, foundation demolition, and backfill plan to address remaining impacted soil within the spill site. The *Removal Action Workplan* is included as Appendix B. This plan was approved by Unified Command.

#### 2.1.2 *Current Cleanup Status*

Current soil cleanup activities include on-going excavation and removal of impacted soil at the spill site and demolition of power line foundations in accordance with the approved *Removal Action Workplan*. Excavation activities were initiated on July 23, 2010 and are anticipated to be completed by mid September 2010. These activities include the following:

- Excavation of an estimated additional 1,700 cubic yards of soil from the spill site. Including the estimated 500 yards that were removed during emergency response activities, the total volume of soil removed from the spill site is expected to total 2200 yards. Off-site disposal will occur in accordance with the *Removal Action Workplan*.
- In accordance with the *Removal Action Workplan*, daily confirmation soil samples from the excavation boundaries are taken and excavation will continue until closure criteria have been met.
- Closure criteria have been established in accordance with the UDEQ Leaking Underground Storage Tank (LUST) Initial Screening Levels (ISLs), as agreed upon by UDEQ.

Compaction of clean backfill in the excavated area begins when closure criteria have been met.

### 2.1.3 *Future Cleanup Activities and/or Monitoring*

The following future cleanup and/or monitoring activities will be performed to address impacted soil at the spill site.

- Re-vegetation and restoration of the site in accordance with the *Restoration Conceptual Plan* which is being developed in coordination with Salt Lake City, Salt Lake County, and the University of Utah.
- Development of a post-remediation monitoring plan, if determined necessary, that will take into account the Salt Lake City's drinking water source protection plan and account for residual oil that cannot be removed without irrecoverable damage to the environment following completion of the excavation activities. As outlined in the *Removal Action Workplan*, the intent is not to leave impacted soil on-site in excess of the established clean-up levels (e.g., ISLs), but it is possible impacted soil could remain in inaccessible areas as detailed above (e.g., around tree roots, etc.). To date, all confirmation soil sample results have been well below the established clean-up levels.
- The Mt. Olivet Cemetery Pond overflow ditch is scheduled to be replaced to facilitate excavation of potentially impacted soil beneath the ditch immediately following completion of the spill site excavation.

## 2.2

## IMPACTED SURFACE WATER

### 2.2.1

### *Completed Cleanup*

Surface water within Red Butte Creek, Liberty Park Pond, the Jordan River, and Mt. Olivet Cemetery Pond were potentially impacted by the release. The following activities have been completed to address impacted surface water from the release:

- A Stormwater Pollution Prevention Plan (SWPPP) was prepared for and has been implemented at the spill site.
- Free oil was removed from Red Butte Creek and Liberty Park Pond using booms, absorbent pads, and vacuum trucks.
- Water samples collected from Red Butte Creek by various agencies showed no signs of dissolved phase impacts (samples were non-detect for TPH and BTEX).
- Oil booms were maintained at various strategic locations along Red Butte Creek and the Jordan River until residual oil was removed. Booms remain in place at select locations.
- Completed a *Red Butte Creek Stormwater Culvert Inspection Plan*. This plan is included as Appendix C.
- Inspected Mt. Olivet Cemetery Pond for free oil, oil-impacted vegetation, and soil. Shoreline Cleanup Assessment Technique Team (“SCAT”) surveys of pond found no visible oily impacts.
- Maintained booms, and changed out absorbent material as necessary at Mt. Olivet Cemetery Pond.
- Collected water and sediment samples from Mt. Olivet Cemetery Pond to confirm cleanup is complete. Samples collected by USEPA were reported to be clean and the USEPA indicated that the pond is suitable for irrigation use and recommended no further action. Laboratory results from this sampling event are available on the Utah DEQ Division of Water Quality web site (<http://www.deq.utah.gov/Issues/redbuttespill/index.htm>) and the USEPA web site.

## 2.2.2 *Current Cleanup Status*

Oil booms are still in place at strategic locations and are monitored and maintained. These activities will continue until residual oil contamination sources are remediated and the potential for recontamination has been eliminated.

## 2.2.3 *Future Cleanup Activities and/or Monitoring*

A maintenance SCAT will continue conducting periodic assessments to locate residual oil. This will include walking the creek weekly to detect visible sheens, odors, and to perform restoration/maintenance needs such as maintaining booms and directing cleanup activities as needed. Long-term monitoring and sampling will be conducted based on the final approved version of the *Water and Sediment Sampling Plan* included as Appendix D. The *Water and Sediment Sampling Plan* is under review by the agencies.

## 2.3 *IMPACTED SEDIMENT*

### 2.3.1 *Completed Cleanup*

Sediment within the Red Butte Creek, Liberty Park Pond, and Mt. Olivet Cemetery Pond was potentially impacted by the release. The following cleanup activities have been conducted to address potentially impacted sediment:

- Removed free oil from Red Butte Creek using booms, absorbent pads, and vacuum trucks.
- Two flushes of the Red Butte Creek were completed with water from the Red Butte Reservoir. This process loosened sediment and flushed oil contaminants downstream for capture by containment booms and absorbent pads.
- Portable pumps were used to manually water wash impacted areas of Red Butte Creek to remove oil from sediment.
- Sediment samples were collected from Mt. Olivet Cemetery Pond to confirm cleanup is complete. Samples collected by USEPA were reported to be clean and the USEPA indicated that the pond is suitable for irrigation use and recommended no further action.

### 2.3.2 *Current Cleanup Status*

SCAT is visually monitoring waterways using NOAA-based guidelines (NOAA. 2000. Shoreline Assessment Manual, Third Edition. HAZMAT Report 2000-1. Seattle: Office of Response and Restoration, National Oceanic and Atmospheric Administration) to identifying oil-impacted sediment. With the diminished creek flows during the summer, impacted sediment is being remediated by pads and hand excavation as identified.

### 2.3.3 *Future Cleanup Activities and/or Monitoring*

SCAT will continue conducting periodic assessments to locate potential residual oil. This will include walking the creek to detect visible sheen, odors, or other indications of potential impacts. Long-term monitoring and sampling will be conducted based on the final approved *Water and Sediment Sampling Plan*.

## 2.4 **IMPACTED HARD SURFACES**

### 2.4.1 *Completed Cleanup*

- Identified impacted hard surfaces along Red Butte Creek have been manually water washed with portable pumps and water.
- A *Red Butte Creek Stormwater Culvert Inspection Plan* was prepared and implemented (see Appendix C).
- Storm drain culverts and other hard surfaces have been cleaned as directed by the Salt Lake City Department of Public Utilities.
- Completed a *Red Butte Creek Stormwater Culvert Inspection Plan*.

### 2.4.2 *Current Cleanup Status*

Teams are currently inspecting hard-surface features for oil impacts and developing a cleanup plan with agency and property owner input. Features with oil impacts will be cleaned using water, a biodegradable cleaner, pressure washing, or steam cleaning.

### 2.4.3 *Future Cleanup Activities and/or Monitoring*

The majority of the reclamation work at Liberty Park Pond and Mt. Olivet Cemetery Pond is scheduled to begin once activities at the spill site have been completed.

The concrete lined ditch at Mt. Olivet Cemetery Pond will be removed and impacted soil beneath the ditch will be removed. Following these activities the excavation will be backfilled and a new concrete ditch will be constructed in accordance with guidance from the Cemetery Board and the State Historic Preservation Office. Two small prominent water features of historic significance will be cleaned and the new concrete channel segments will be constructed to match these features.

The perimeter curbing at the Liberty Park will be removed in the late fall of 2010, impacted soil will be removed and replaced as needed and a new concrete curb wall and sidewalk will be constructed. Concurrently, inflow from Red Butte and Emigration creeks will be diverted around the pond and the water will be drained from the pond and all sediment overlying the gravel and woven geotextile bottom liner will be removed and disposed of at the Clean Harbors landfill in western Utah.

Future cleanup of storm drain culverts and other hard surfaces will be conducted under the direction of the Salt Lake City Department of Public Utilities and will most likely occur after other remedial/restoration work in other areas has been completed.

## 2.5 ***IMPACTED GROUNDWATER***

### 2.5.1 ***Completed Cleanup***

Due to the short resident time of the oil on the ground surface it is unlikely that groundwater could have been impacted by the release. Findings from the *Site Characterization Summary and Remediation Plan* suggest that groundwater was not impacted. Groundwater was not encountered at depths exceeding 25 feet, well beyond any impacted soil. The following activities have been completed to minimize the potential for groundwater impacts:

- Repaired pipeline, stopped the crude oil leak, and collected free oil.
- Ongoing Excavation and off-site disposal of approximately 1,700 cubic yards of petroleum impacted soil at the spill site. Groundwater has not been encountered during deep excavations around the power line foundations.

### 2.5.2 ***Current Cleanup Status***

There are currently no groundwater cleanup activities planned.

### 2.5.3 *Future Cleanup Activities and/or Monitoring*

No future groundwater cleanup or monitoring activities are planned.

## 2.6 *IMPACTED BIOLOGICAL SPECIES*

### 2.6.1 *Completed Cleanup*

Wildlife was oiled by the release. The following activities have been completed to minimize additional oiling and to mitigate the impacts of oiled wildlife:

- A *Wildlife Management Plan*, included as Appendix E, was developed to coordinate and manage the care and rehabilitation activities of oiled wildlife.
- Responders and the public were advised to contact Utah Department of Wildlife Resources and/or local Animal Control for oiled wildlife rescue and rehab.

### 2.6.2 *Current Cleanup Status*

SCAT continue to monitor the impacted areas for potential oiled wildlife.

### 2.6.3 *Future Cleanup Activities and/or Monitoring*

Identified oiled wildlife will be rehabilitated in accordance with the procedures outlined in the *Wildlife Management Plan*.

Samples of the biological communities (e.g., enumeration of benthic macroinvertebrates, collection of periphyton samples) have been proposed as part of the characterization of conditions in the Red Butte Creek, relative to the recent oil release. CPL is concerned about the difficulties that this approach, the feasibility of obtaining these data, and how the data would apply to the process of characterization of effects of the release.

Samples of the biological communities present in streams have been used in many settings, to represent the "health" of the biological community reflects to measure both current and historical stream conditions (e.g., USEPA Rapid Bioassessment Protocol). Red Butte Creek, in the vicinity of the pipe line release, is an urban stream, subject to numerous sources of impact which are not reflective of natural conditions, for example:

- Residential and municipal runoff contaminants (e.g. insecticides, pesticides, fungicides, fertilizer, TPH from parking lots and roadways, and other materials)
- Temperature fluctuations and other variables introduced by constructed habitat (e.g., cement-lined stream banks and culverts)
- Water flow rate (regulated by Red Butte Reservoir Dam)

All of which have the effect of altering the community, and so the samples collected from it. It is the CPL position, therefore, that in order to interpret biological sample data from Red Butte Creek, in the context of the oil release, those data would be compared to equivalent samples collected from nearby streams that reflect what conditions might exist in Red Butte Creek in the absence of the release.

The biological communities of Red Butte Creek and nearby streams will also exhibit variability, independent of the release, in response to other variables; and the nature and magnitude of these responses will vary between creeks. Examples of these other external factors include:

- Annual climatic events (e.g., spring snow melt and fall thunderstorm flushing organisms out of the creek)
- Physical habitat (e.g., particle size distribution of the sediments, presence and nature of micro-structure)
- Nutrients (e.g., naturally occurring organic carbon, nitrogen, phosphates)

Physico-chemical factors (e.g., temperature regime photoperiod, light intensity, turbidity, dissolved oxygen) identifying equivalent, nearby “reference” streams (Parleys Creek and Emigrant Creek have been criticized as inappropriate reference streams) has proved challenging. Also, relevant biological community data, collected immediately prior to the spill – that could serve as a “baseline” for Red Butte Creek – are not available. The absence of either 1) suitable reference locations or 2) baseline data, in CPL’s opinion, precludes any meaningful diagnostic, objective comparison of biological data from Red Butte Creek to a relevant reference or baseline data set.

CPL proposes the use of chemical analytical data to identify the presence and concentrations of hydrocarbons in Red Butte Creek, as well as – through forensic chemistry – the source of those hydrocarbons, whether

they originate from the pipeline spill, natural organic leachate, or residential or municipal runoff.

When these analytical results indicate that stream chemistry has returned to its pre-spill condition, Red Butte Creek, by virtue of its hydrology, will repopulate via upstream and downstream movement of aquatic organisms. The flushing of biological communities is a common phenomenon in mountain streams (e.g., spring floods), and many species present in such habitats are able to quickly repopulate streams reaches.

For all of these reasons, CPL can only support the use of analytical chemistry data as a means of assessing the impact to and recovery of the biological communities of Red Butte Creek.

As to the Jordan River, this water body has long been recognized as degraded from industrial and other sources of pollutants. There are numerous sources contributing to the nutrient loading. Urban stormwater comes from several sources. There are no baseline biological or chemical data. SCAT data indicated that any potential impacts to the Jordan River were limited. Booming strategy for the Jordan River was based on the possibility of oil being trapped in the underground stormwater culvert systems. Flushing of those culverts yielded no oil. Biological sampling of the Jordan River is not planned.

Notwithstanding the above discussion, CPL remains open to discussing appropriate methods to address potential impacts, if any, to biological resources.